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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/730,603	12/07/2000	Zining Wu	MP0065	9241

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MARVELL SEMICONDUCTOR, INC.  
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EXAMINER

ODOM, CURTIS B

ART UNIT	PAPER NUMBER
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2634

13

DATE MAILED: 05/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/730,603

Applicant(s)

WU ET AL.

Examiner

Curtis B. Odom

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3, 5-8, 26-28, 30-33, 39-41 and 43-46 is/are allowed.
- 6) ☒ Claim(s) 4, 9-12, 16, 21-25, 29, 34-38, 42 and 47-52 is/are rejected.
- 7) ☒ Claim(s) 13-15 and 17-20 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/7/00 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to because:

a. In Fig. 5, the “address generator 530” is suggested to be changed to the “address generator 804”.

b. All drawings are suggested to be labeled with not only reference numbers, but also the reference names (see Figs. 5-8, 10 and 11).

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Specification*

2. The disclosure is objected to because of the following informalities:

a. Throughout the specification, the application numbers for the referenced applications are suggested to be completed.

b. On page 3, line 22, “interleaver 306” is suggested to be changed to “deinterleaver 308”.

c. On page 18, line 15 define “LLR”.

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d. On page 22, line 31, "soft channel decoder 914" is suggested to be changed to "soft channel decoder 504".

Appropriate correction is required.

### *Claim Objections*

3. Claims 9-25 and 34 are objected to because of the following informalities:

a. Regarding claims 9-12 and 21-25, a period should be placed after each letter which denotes a new step. For example "i" is suggested to be changed to "i."

b. Regarding claim 12, the phrase "claim 10" should be "claim 11".

c. Regarding claims 13-25, in claim 13, the steps "g, h, and i" are suggested to be changed to steps "a, b, and c".

d. Regarding claim 14, the steps "j, k, and l" are suggested to be changed to steps "d, e, and f".

e. Regarding claim 23, the phrase "claim 9" is suggested to be changed to "claim 22".

f. Regarding claim 25, the phrase "claim 23" is suggested to be changed to "claim 24".

g. Regarding claim 34, the phrase "claim 1" is suggested to be changed to "claim 26".

Appropriate correction is required.

*Claim Rejections - 35 USC § 112*

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 9-12, 21-25, 34-38, and 47-52 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 21, 34, 47, and 52 recite the limitation “converting llrAPP<sub>k</sub> information into hard information”. However, it is the understanding of the examiner that llrAPP<sub>i</sub>, not llrAPP<sub>k</sub>, is converted in hard information as disclosed by the specification (page 23, lines 1-11). The information llrAPP<sub>i</sub> is also processed as described in the specification (page 23, line 12-page 24, line 2) in accordance with claims 9-12, 21-25, 34-38, and 47-52. Therefore, it is not obvious to the examiner whether claims 9-12, 21-25, 34-38, and 47-52 should include reference to information llrAPP<sub>i</sub>, or information llrAPP<sub>k</sub>.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 4, 9-12, 16, 21-25, 29, 34-38, 42, and 47-52 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. All variables in each claim must be

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defined. Regarding claims 4, 16, 29, and 42, the variable  $llrP_i$  must be defined. Regarding claims 9-12, 21-25, 34-38, and 47-52, the variable  $llrAPP_i$  must be defined.

### ***Allowable Subject Matter***

8. Claims 1-3, 5-8, 13-15, 17-20, 26-28, 30-33, 39-41, and 43-46 are allowable over prior art (if above objections are overcome) because related references do not disclose decoding low-density parity-check codes by calculating information from a bit node to an equation node, decision aided equalizing in response to the calculation, and calculating information from the equation node to the bit node in response to the equalizing.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Blanksby et al. (U. S. Patent No. 6, 539, 367) discloses decoding using information between bit nodes and equation nodes.

Morikawa et al. (U. S. Patent No. 5, 974, 540) discloses process data using a sum-product algorithm.


10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 703-305-4097. The examiner can normally be reached on Monday- Friday, 8-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Curtis Odom  
May 4, 2004

  
**STEPHEN CHIN**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**